Abstract of the Invention

An adaptive entropy coder is coupled with a localized conditioning context to provide efficient compression of images with localized high frequency variations. In one implementation, an arithmetic coder can be used as the adaptive entropy coder. The localized conditioning context includes a basic context region with multiple context pixels that are adjacent the current pixel, each of the context pixels having an image tone. A state is determined for the basic context region based upon a pattern of unique image tones among the context pixels therein. An extended context region that includes the basic context region is used to identify a non-local trend within the context pixels and a corresponding state. A current pixel may be arithmetically encoded according to a previously encoded pixel having the same tone or as a not-in-context element. In one implementation, a not-in-context element may be represented by a tone in a color cache that is arranged as an ordered list of most recent not-in-context values.